ANNALS OF CARNEGIE MUSEUM
VOL. 64, NUMBER 3, PP. 219–237 18 AUGUST 1995

DISTRIBUTION AND ECOLOGY OF SOME ARGENTINE BATS (MAMMALIA)

MICHAEL A. MARES[1,3]
Research Associate, Section of Mammals

RUBÉN M. BÁRQUEZ[2]
Visiting Museum Specialist, Section of Mammals

JANET K. BRAUN[1]

ABSTRACT

New localities are reported for 28 species of Argentine bats. One species, *Vampyressa pusilla,* has a locality reported in Argentina for the first time. New provincial records are reported for seven species, including *Desmodus rotundus, Histiotus macrotus, Histiotus magellanicus, Lasiurus cinereus, Lasiurus salinae, Myotis levis,* and *Tadarida brasiliensis.* Information on habitat associations and reproduction are given for all species, including *Noctilio albiventris, Artibeus planirostris, Vampyressa pusilla, Desmodus rotundus, Eptesicus furinalis, Histiotus magellanicus, Lasiurus salinae, Lasiurus varius, Myotis albescens, Myotis chiloensis, Myotis levis, Myotis nigricans, Myotis riparius, Myotis ruber,* and *Tadarida brasiliensis,* species for which very little information was known in Argentina.

RESUMEN

Se presentan nuevas localidades para 28 especies de murciélagos argentinos. Se indica la localidad argentina donde ha sido capturado por la primera vez la especie *Vampyressa pusilla.* También se presentan nuevas localidades provinciales de siete especies, incluyendo *Desmodus rotundus, Histiotus macrotus, Histiotus magellanicus, Lasiurus cinereus, Lasiurus salinae, Myotis levis,* y *Tadarida brasiliensis.* Incluímos información sobre habitat y reproducción de todas las especies, incluyendo *Noctilio albiventris, Artibeus planirostris, Vampyressa pusilla, Desmodus rotundus, Eptesicus furinalis, Histiotus magellanicus, Lasiurus salinae, Lasiurus varius, Myotis albescens, Myotis chiloensis, Myotis levis, Myotis nigricans, Myotis riparius, Myotis ruber,* y *Tadarida brasiliensis,* especies que carecían de mucha información en la argentina.

INTRODUCTION

Argentina contains a rich mammal fauna of more than 300 species (Wilson and Reeder, 1993). The country's largely south temperate location, with only a small portion lying within the tropics, suggests that bats form a relatively small proportion of the overall fauna. There are 57 species of bats in Argentina, or about 19% of the country's total mammal fauna (Bárquez et al., 1993). Bárquez (1987) presented a monograph on Argentine bats that included systematic revisions, keys, identifications and clarifications of identifications, distributions, specimens examined, measurements of external and cranial characters, and information on the ecology of all species known to occur in Argentina at that time. Subsequently,

[1] Oklahoma Museum of Natural History, University of Oklahoma, Norman, Oklahoma 73019.
[2] Facultad de Ciencias Naturales e Instituto Miguel Lillo, Universidad Nacional de Tucumán, Miguel Lillo 205, 4.000 Tucumán, Argentina.
[3] Department of Zoology, University of Oklahoma, Norman, Oklahoma 73019.
Submitted 8 August 1994.

new information has been published regarding Argentine bats (Bárquez, 1988; Bárquez and Lougheed, 1990), including a monograph on the bats of the Argentine chaco (Bárquez and Ojeda, 1992), and a bilingual field guide to the bats of Argentina (Bárquez et al., 1993). Although each of these has added to our knowledge of the chiropteran fauna of Argentina, the country's bat fauna still cannot be considered well known. In this paper we present additional information on the distribution, ecology, reproduction, and habitat selection of 28 species of bats collected during four years of faunal survey research in Argentina (1990–94).

Methods

This study was based on 349 specimens collected between 1990 and 1994. All specimens examined are preserved as skin, skull, and skeleton, or in alcohol, and are deposited in the following museums (acronyms given in parentheses): Colección Mamíferos Lillo, Universidad Nacional de Tucumán, Tucumán, Argentina (CML); Instituto Argentino de Investigaciones de Zonas Aridas, Mendoza, Argentina (IADIZA); Oklahoma Museum of Natural History, Norman, Oklahoma (OMNH). Specimens designated by the acronym "Arg" are individuals whose disposition among the three institutions has not been determined, but which will be allocated to one of the three institutions mentioned above within the next year. Tissues (heart, liver, kidney, spleen) were preserved in liquid nitrogen or a DMSO solution and are stored at the Frozen Tissue Collections of the Texas Cooperative Wildlife Collection, Texas A&M University, College Station, Texas. Karyotypes are available for most species and are either at the Oklahoma Museum of Natural History or the Texas Cooperative Wildlife Collection, Texas A&M University.

Collecting localities are shown in Figure 1. Most specimens were captured using various sizes of mist nets; a few individuals were taken by hand from roosts. The Appendix provides an alphabetical listing of the localities, province and department (given in parentheses) and geographic coordinates. Information on reproduction and habitat were taken from the specimen tags, from the project data sheets, or from field notes. The measurement given for testes size is that for one testis, although both were measured. Table 1 is a list of localities and the bat species collected at each.

Species Accounts

Families, subfamilies, genera, and species follow Koopman (1993), except for the use of the subfamily Phyllostominae which follows Baker et al. (1989). Where deviations from these systematic reviews occur, we have stated our justification. Localities reported are given in "Specimens Examined." General taxonomic and ecological information appear in the "Comments."

Family Noctilionidae
Noctilio albiventris Desmarest, 1818

Specimens Examined.—(2) CORRIENTES: Departamento Ituzaingó: along Hwy 12, 61 km W Posadas, 2 (1 CML, 1 OMNH).

Comments.—This species is known from one locality each in the provinces of Formosa, Chaco, Santa Fé, and Misiones. It previously was known from three sites in the province of Corrientes. All of these localities are in the drainages of the Río Paraná and Río Uruguay. The new locality, which is near the Misiones Province locality of Posadas, documents the distribution of this species in the eastern part of the province of Corrientes. This was the only bat species caught

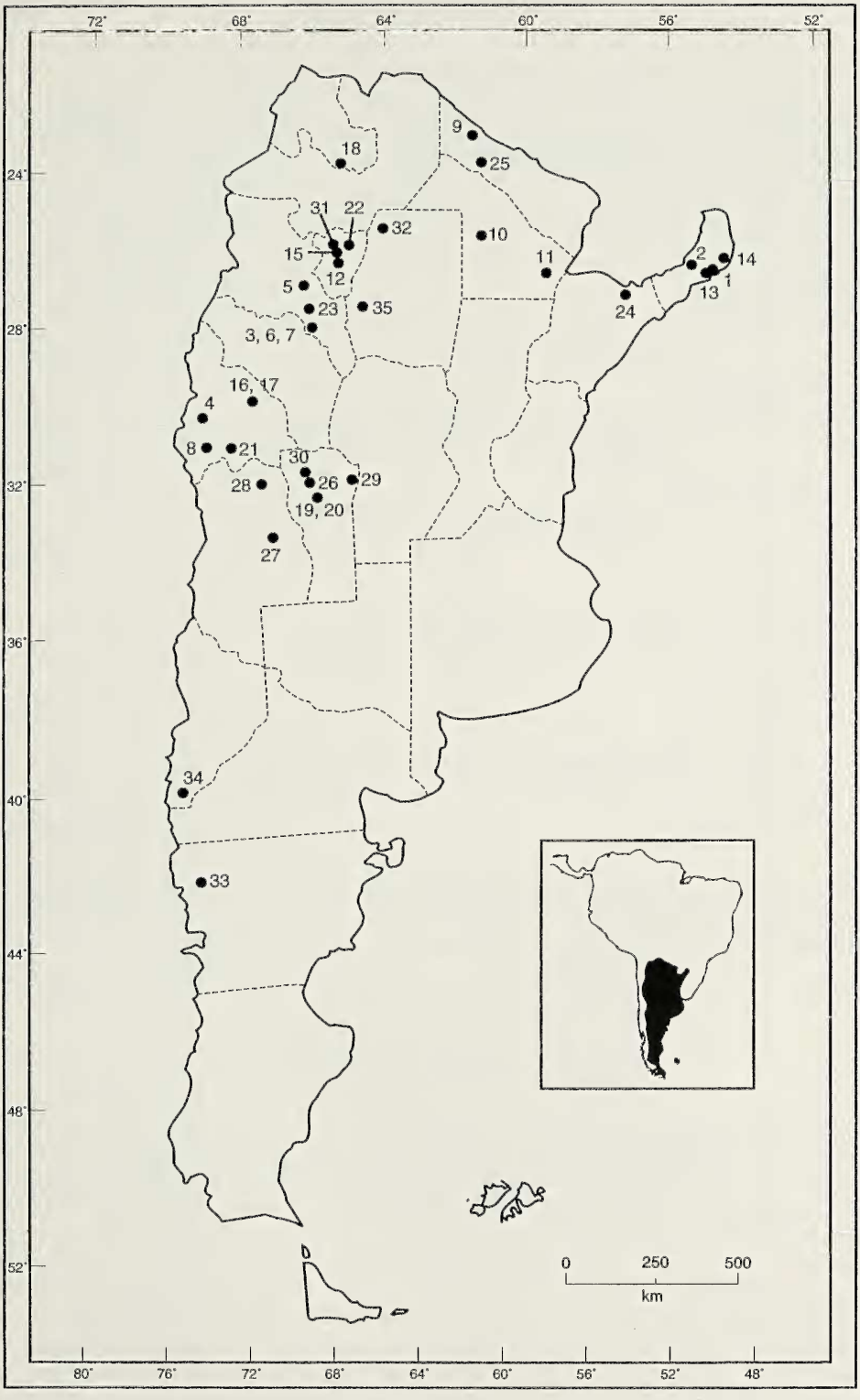

Fig. 1.—Map of localities mentioned in the text. Numbers correspond to the Appendix.

Table 1.—*Species of bats captured at each locality.*

Province	Locality	Species
Catamarca	Balneario Municipal Capayán	*Myotis levis*
	Choya, 13 km NNW Andalgalá	*Desmodus rotundus*
		Histiotus macrotus
	Chumbicha, 1 km N and W of balneario by road	*Eptesicus furinalis*
		Histiotus macrotus
		Lasiurus borealis
		Lasiurus salinae
		Myotis levis
		Tadarida brasiliensis
	Chumbicha, at balneario	*Eptesicus furinalis*
		Lasiurus salinae
		Tadarida brasiliensis
	Pomán, 95 km S Andalgalá near balneario	*Tadarida brasiliensis*
Chaco	El Mangrullo, 20 km NNW by road and 11 km NE by road	*Desmodus rotundus*
		Eptesicus furinalis
		Myotis nigricans
	Estancia San Miguel, along Hwy 90, 15 km NW jct. Hwy 90 and Hwy 11	*Sturnira lilium*
		Desmodus rotundus
		Molossops temminckii
		Molossus ater
Chubut	Tecka, 3 km N, along Hwy 40	*Myotis chiloensis*
Corrientes	Posadas, 61 km W, along Hwy 12	*Noctilio albiventris*
Formosa	El Churcal, approx. 10 km SSE Buena Vista	*Eptesicus furinalis*
		Myotis riparius
		Eumops patagonicus
		Molossops temminckii
		Molossus molossus
	Puesto Divisadero, 35 km S, 5 km E Ing. Guillermo N. Juarez	*Eptesicus furinalis*
		Cynomops abrasus
		Eumops patagonicus
		Molossops temminckii
		Molossus molossus
Jujuy	On Highway 9 at border with Salta, at campground on the way to El Carmen	*Artibeus planirostris*
		Sturnira erythromos
		Desmodus rotundus
Mendoza	Reserva Ecologica Ñacuñan	*Myotis levis*
	Reserva Telteca	*Myotis levis*
Misiones	6 km NE by Highway 2 of jct. Highway 2 and Arroyo Paraíso	*Pygoderma bilabiatum*
		Eptesicus furinalis
		Myotis levis
	Aristóbulo del Valle, 10 km W by road along Río Cuñapirú	*Pygoderma bilabiatum*
		Sturnira lilium
		Eumops patagonicus
	Jct. Hwy 2 and Arroyo Paraíso	*Artibeus lituratus*
		Myotis levis
	Jct. Hwy 21 and Arroyo Oveja Negra, approx. 2 km W Parque Provincial Moconá	*Artibeus lituratus*
		Vampyressa pusilla
		Myotis levis
		Myotis ruber
Neuquén	Villa La Angostura, 19 km N	*Histiotus macrotus*
		Histiotus magellanicus
		Lasiurus varius
		Myotis chiloensis
San Juan	Castaño Nuevo, 9 km NW Villa Nueva	*Desmodus rotundus*
	Complejo Astronómico El Leoncito, 7 km W	*Histiotus macrotus*

Table 1.—*Continued.*

Province	Locality	Species
	Las Tumanas, along Hwy 510 at crossing of Río Tumanas	*Myotis levis* *Tadarida brasiliensis*
	Las Tumanas, Río Tumanas	*Tadarida brasiliensis*
	Pedernal	*Lasiurus salinae* *Myotis levis*
San Luis	Paso del Rey, 1 km N, along Arroyo de la Canada Honda	*Histiotus macrotus* *Tadarida brasiliensis*
	Paso del Rey, 9 km N	*Tadarida brasiliensis*
	Quebrada de Lopez, San Francisco del Monte de Oro	*Myotis levis*
	Rincón de Papagayos, 2 km E Papagayos	*Lasiurus cinereus* *Tadarida brasiliensis*
	San Francisco del Monte de Oro, 7 km E from downtown	*Desmodus rotundus*
Santiago del Estero	Santo Domingo	*Myotis albescens* *Myotis nigricans*
	Virgen del Valle picnic area on Highway 64 between Santa Catalina and La Puerta Chiquita	*Eptesicus furinalis*
Tucumán	Horco Molle, Biological Reserve	*Sturnira erythromos* *Tadarida brasiliensis*
	Las Juntas, 22 km W Choromoro	*Artibeus planirostris* *Sturnira erythromos* *Histiotus macrotus* *Lasiurus borealis* *Tadarida brasiliensis*
	Piedra Tendida, 12 km WNW Burruyacú along Río Cajón	*Sturnira erythromos* *Myotis keaysi* *Myotis nigricans*
	San Pedro de Colalao, south of, at km marker 42 on Highway 364	*Sturnira erythromos* *Myotis levis*

at this locality, which consisted of a group of *Eucalyptus* trees on dry ground within a large marshland. A number of *Noctilio* were hanging in the *Eucalyptus* trees. Both specimens were adult males collected at the end of November. One had testes measuring 5 × 3 mm.

Family Phyllostomidae
Subfamily Phyllostominae
Artibeus lituratus (Olfers, 1818)

Specimens Examined.—(9) MISIONES: Departamento Guaraní: jct. Hwy 21 and Arroyo Oveja Negra, approx. 2 km W Parque Provincial Moconá, 6 (2 CML, 2 IADIZA, 2 OMNH); jct. Hwy 2 and Arroyo Paraíso, 3 (OMNH).

Comments.—This species is well known from the province of Misiones. The above localities are two new ones for the province. See Table 1 for a list of other bat species captured at these localities.

The specimens from Arroyo Oveja Negra were caught in a net placed over a river in upland semideciduous forest. The habitat of the Arroyo Paraíso locality was disturbed montane wet forest. All individuals were collected at the end of November and were adults. Two of the four females were lactating. Three males had scrotal testes, one measuring 9 × 6 mm.

Artibeus planirostris (Spix, 1823)

Specimens Examined.—(5) JUJUY: Departamento El Carmen: on Highway 9 at border with Salta, at campground on the way to El Carmen, 3 (1 IADIZA, 2 OMNH). TUCUMAN: Departamento Trancas: Las Juntas, 22 km W Choromoro, 2 (1 CML, 1 OMNH).

Comments.—This species is well known from both Jujuy and Tucumán provinces. Both localities are new for these provinces. See Table 1 for a list of other bat species captured at these localities.

The specimens from Jujuy were captured in Yungas forest where the dominant trees were nogal (*Juglans australis*), palo blanco (*Calocophyllum multiflorum*), and laurel (*Phoebe porphyria*). The habitat at Las Juntas was montane transitional forest; individuals were captured in nets placed across the Río Choromoro. The specimens from Jujuy Province (1 female, 2 males) were captured in mid-February. The female was young, with cartilaginous phalanges and an open vagina. One male had testes measuring 3 × 2.5 mm; the second had small scrotal testes measuring 6 × 4 mm. An adult male and an adult female were captured in Tucumán in early July. The female had an open vagina and the male had testes measuring 6 × 4 mm.

Pygoderma bilabiatum (Wagner, 1843)

Specimens Examined.—(2) MISIONES: Departamento Cainguas: 10 km W Aristóbulo del Valle by road along Río Cuñapirú, 1 (CML). Departamento Guaraní: 6 km NE by Highway 2 of jct. Highway 2 and Arroyo Paraíso, 1 (OMNH).

Comments.—This species is well documented in the province of Misiones. The above sites add two new localities to its distribution. See Table 1 for a list of other bat species captured at these localities. The habitat at Arroyo Paraíso was disturbed moist forest with bamboo. Both individuals were captured at the end of November. An adult female had one embryo with a crown–rump length of 8 mm. The adult male had testes measuring 4 × 3 mm.

Sturnira erythromos (Tschudi, 1844)

Specimens Examined.—(9) JUJUY: Departamento El Carmen: on Highway 9 at border with Salta, at campground on the way to El Carmen, 2 (1 IADIZA, 1 OMNH). TUCUMAN: Departamento Burruyacú: Piedra Tendida, 12 km WNW Burruyacú along Río Cajón, 3 (1 CML, 1 IADIZA, 1 OMNH). Departamento Trancas: at km marker 42, on Highway 364, south of San Pedro de Colalao, 1 (OMNH); Las Juntas, 22 km W Choromoro, 2 (1 CML, 1 OMNH). Departamento Yerba Buena: Biological Reserve at Horco Molle, near residencia, 1 (OMNH).

Comments.—This species is well documented from the provinces of Jujuy and Tucumán. These are additional localities. See Table 1 for a list of other bat species captured at these localities.

The species was captured in Yungas forest (Jujuy locality), where nogal (*Juglans australis*), palo blanco (*Calocophyllum multiflorum*), and laurel (*Phoebe porphyria*) were the dominant trees, and in transitional forest (Tucumán localities).

All individuals were adults captured in the months of January, February, June, or July. A female from El Carmen collected in February had an open vagina; a second female from this locality had a closed vagina and was molting. A male

from Piedra Tendida collected in July had abdominal testes measuring 5 × 3 mm. A male from San Pedro de Colalao in January had testes measuring 5 × 4 mm.

Sturnira lilium (E. Geoffroy, 1810)

Specimens Examined.—(8) CHACO: Departamento 1° de Mayo: along Hwy 90, 15 km NW jct. Hwy 90 and Hwy 11, Estancia San Miguel, 6 (2 CML, 1 IADIZA, 3 OMNH). MISIONES: Departamento Cainguas: 10 km W Aristóbulo del Valle by road along Río Cuñapirú, 2 (1 IADIZA, 1 OMNH).

Comments.—This species is well known from Misiones. The new records document a new provincial locality. In Chaco Province, *S. lilium* was previously known from specimens from the single locality of Resistencia. The new records are the second documented locality of this species in the province. See Table 1 for a list of other bat species captured at these localities.

The habitat at the Estancia San Miguel is wet chaco with isolated forest patches.

All individuals collected in late November were adults. Two females from Estancia San Miguel were pregnant, each with one fetus. The two males from Misiones Province had testes measuring 5 × 4 and 6 × 4 mm.

Vampyressa pusilla (Wagner, 1843)

Specimens Examined.—(1) MISIONES: Departamento Guaraní: jct. Hwy 21 and Arroyo Oveja Negra, approx. 2 km W Parque Provincial Moconá, 1 (CML).

Comments.—This is the first designation of a specific collecting locality for this species in Argentina, although the province was mentioned by Bárquez et al. (1993). The species was captured along a small arroyo (3–5 m wide, <1 m deep) in wet subtropical forest. *Artibeus lituratus, Myotis levis,* and *Myotis ruber* were also captured at the same site (Table 1). The adult male *V. pusilla* was captured in a net placed across a river in early December. Testes measured 4 × 3 mm.

Subfamily Desmodontinae

Desmodus rotundus (E. Geoffroy, 1810)

Specimens examined.—(19) CATAMARCA: Departamento Andalgalá: Choya, 13 km NNW Andalgalá, 4 (1 CML, 1 IADIZA, 2 OMNH). CHACO: Departamento 1° de Mayo: along Hwy 90, 15 km NW jct. Hwy 90 and Hwy 11, Estancia San Miguel, 8 (3 CML, 2 IADIZA, 3 OMNH). Departamento Almirante Brown: 20 km NNW and 11 km NE by road El Mangrullo, 2 (1 CML, 1 OMNH). JUJUY: Departamento El Carmen: on Highway 9 at border with Salta, at campground on the way to El Carmen, 2 (1 IADIZA, 1 OMNH). SAN JUAN: Departamento Calingasta: Castaño Nuevo, 9 km NW Villa Nueva, 1 (OMNH). SAN LUIS: Departamento Ayacucho: San Francisco del Monte de Oro, 7 km E from downtown, 2 (OMNH).

Comments.—The specimens from Catamarca, Jujuy, and San Luis document new localities for this species in these provinces. The specimens from Chaco Province are the first known from the western part of the province, and document the presence of this species in the central Argentine chaco. The specimen from San Juan Province is the first documented record of this species in the province, and the westernmost locality of this species in Argentina, although the distribution given by Bárquez et al. (1993) included the province of San Juan. This species

was captured in association with numerous other bat species (Table 1), although at the San Juan and San Luis province localities it was the only species of bat collected.

This species was captured in many habitat types. The Choya (Catamarca Province) specimens were captured outside of the police station in the village of Choya; the surrounding habitat is dry monte desert. These are the first records of the species in the Bolsón de Pipanaco since Mares (1973) first captured it in 1972 near the town of Andalgalá. The habitat at Estancia San Miguel (Chaco Province) is wet chaco with patches of tall forest, whereas the habitat at the El Mangrullo site (Chaco Province) is dry chacoan thorn scrub. At this latter locality, about 40 vampire bats were roosting in a deep (about 40 m) salt water well. We were able to collect two individuals—all the others avoided the net we placed over the opening of the well and refused to leave the roost during the evening. This species was collected in Yungas forest in Jujuy Province in a forest dominated by nogal, palo blanco, and laurel. In San Juan Province, a single individual was collected in a net placed across a road in a stand of *Populus*; the site was situated in a river valley near an abandoned mine.

Adult specimens were captured in Catamarca Province in late December, in Chaco Province in late November, in Jujuy Province in mid-February, in San Juan Province in late March, and San Luis Province in late April. A subadult also was collected in San Luis Province in late April. Two pregnant females were captured in Chaco Province; each had a single embryo (crown–rump lengths, 32 and 42 mm). A female captured in Jujuy had an open vagina, as did the subadult from San Luis. A male captured in Jujuy in February had testes measuring 7 × 5 mm. A male collected in San Juan Province in March had testes measuring 7 × 7 mm, and a male from San Luis Province in April had abdominal testes. Males collected in Chaco Province in November had testes measuring from 5 × 3 mm to 8 × 6 mm. Males taken from Catamarca Province in December had testes ranging from 5 × 3 mm to 7 × 4 mm.

Family Vespertilionidae
Subfamily Vespertilioninae
Eptesicus furinalis (d'Orbigny, 1847)

Specimens Examined.—(50) CATAMARCA: Departamento Capayán: Chumbicha, 1 km N and W of balneario by road, 4 (1 CML, 1 IADIZA, 2 OMNH); Chumbicha, at balneario, 1 (OMNH). CHACO: Departamento Almirante Brown: 20 km NNW by road and 11 km NE by road El Mangrullo, 39 (11 CML, 11 IADIZA, 17 OMNH). FORMOSA: Departamento Bermejo: 35 km S, 5 km E Ing. Guillermo N. Juarez, Puesto Divisadero, 1 (Arg); El Churcal, approx. 10 km SSE Buena Vista, 3 (Arg). MISIONES: Departamento Guaraní: 6 km NE by Highway 2 of jct. Highway 2 and Arroyo Paraíso, 1 (OMNH). SANTIAGO DEL ESTERO: Departamento Guasayán: Virgen del Valle picnic area on Highway 64 between Santa Catalina and La Puerta Chiquita, 1 (OMNH).

Comments.—The specimens from Chaco Province are the second documentation of this species in the province. Its presence there was first noted by Bárquez and Ojeda (1992). This species was previously known from only two localities in each of the provinces of Formosa and Catamarca. Our specimens document an additional locality for each province. The Formosa individuals more than double

the number of known specimens from the province and document the presence of this species in the western part of the province. There are a number of localities for this species in the provinces of Misiones and Santiago del Estero. This species was always caught with other species of bats, except at the Santiago del Estero locality (Table 1).

The species was captured in many habitat types. The specimens from near Chumbicha (Catamarca Province) were collected in montane chacoan forest above a large pool of water. Nets were placed over the pool and over irrigation canals. The habitat is relatively moist montane chacoan forest with *Prosopis, Cercidium,* and other deciduous trees and with many large columnar cacti (*Cereus* and *Opuntia*). At El Mangrullo, Chaco Province, the habitat was dry chacoan thorn scrub; individuals were captured in nets placed near a water holding tank. The Formosa specimens were captured in wet chacoan gallery forest. In Misiones Province, an individual was captured in disturbed wet forest with a dense bamboo understory and in Santiago del Estero Province, an individual was captured in transitional forest.

A juvenile/subadult male and female were captured in December in Catamarca Province ($n = 2$). Adult males and females were collected in January in Santiago del Estero Province ($n = 1$), July in Formosa Province ($n = 4$), November in the provinces of Chaco ($n = 39$) and Misiones ($n = 1$), and December in Catamarca Province ($n = 3$). Females were lactating in December in Catamarca Province ($n = 3$). Lactating females also were found in November in Chaco Province ($n = 4$). A pregnant female with two fetuses was also captured. A second female was pregnant with one fetus (crown–rump length, 3 mm). Males with scrotal testes were captured in mid-July in Formosa Province. Males with large scrotal testes were noted in Chaco Province in November.

Histiotus macrotus (Poeppig, 1835)

Specimens Examined.—(15) CATAMARCA: Departamento Andalgalá: Choya, 13 km NNW Andalgalá, 1 (OMNH). Departamento Capayán: Chumbicha, 1 km N and W of balneario by road, 8 (3 CML, 2 IADIZA, 3 OMNH). NEUQUEN: 19 km N Villa La Angostura along Hwy 234, 3 (1 CML, 2 IADIZA). SAN JUAN: Departamento Calingasta: 7 km W Complejo Astronómico El Leoncito, 1 (OMNH). SAN LUIS: Departamento Coronel Pringles: 1 km N Paso del Rey, along Arroyo de la Cañada Honda, 1 (OMNH). TUCUMAN: Departamento Trancas: Las Juntas, 22 km W Choromoro, 1(OMNH).

Comments.—The Neuquén and San Juan specimens are new provincial records for the species, although Neuquén was included in the distribution by Bárquez et al. (1993). These specimens serve to connect the otherwise disjunct distribution of this species along the eastern slopes of the Andes. The specimen from San Luis is the second locality of the species in the province and represents the third known specimen from the province. The Catamarca and Tucumán specimens document new localities in those provinces. This species was captured in association with other bat species except at the San Juan locality (Table 1).

An individual of this species was captured outside of the police station in Choya (Catamarca Province); the surrounding area is monte desert. In Chumbicha (Catamarca Province), individuals were collected in nets placed over irrigation canals at the local swimming pool (balneario); the habitat is moist montane chacoan

forest with *Prosopis, Cercidium,* and other deciduous trees, and numerous large columnar cacti (*Cereus* and *Opuntia*). In Neuquén Province, the species was captured in lush, mature, southern rain forest (trees >30 m), with patches of bamboo (*Chusquea*). At El Leoncito (San Juan Province), an individual was captured in a net placed over a cattle pond in an alfalfa field in a desert canyon. In San Luis Province, bats were captured in a net placed over a river in a rocky canyon. In Tucumán Province, this species was captured in transitional forest in a net placed over the Río Choromoro.

We have captured adult males and females in March in San Juan Province (n = 1), April in San Luis Province (n = 1), July in Tucumán Province (n = 1), and December in Catamarca (n = 9) and Neuquén (n = 3) provinces. All females (n = 7) captured in December in Catamarca Province were lactating. Although two of the females collected in Neuquén Province in December were not breeding, a third female was pregnant with one fetus (crown–rump length, 17 mm). The individual captured in San Luis Province was a female with an open vagina. A male with testes of size 4 × 2 mm was captured in December in Catamarca Province.

Histiotus magellanicus (Philippi, 1866)

Specimens Examined.—(3) NEUQUEN: 19 km N Villa La Angostura along Hwy 234, 3 (1 CML, 1 IADIZA, 1 OMNH).

Comments.—Koopman (1993) placed *magellanicus* in synonymy with *montanus.* Our nomenclature follows Philippi (1866), Thomas (1916), and Bárquez et al. (1993). Recognition of this taxon as distinct from *montanus* is based on morphological characters. This species was previously only known from southern Chile and Tierra del Fuego. The above specimens were captured along a trail in southern *Nothofagus* rain forest habitat and are a provincial record that document the distribution of this species much further north than previously recognized. This species was captured with *Histiotus macrotus, Lasiurus varius,* and *Myotis chiloensis* at this locality (Table 1).

An adult female and two adult males were collected in December in Neuquén Province. The female was pregnant with one fetus (crown–rump length, 19 mm). One of the males had large scrotal testes.

Lasiurus borealis (Müller, 1776)

Specimens examined.—(4) CATAMARCA: Departamento Capayán: Chumbicha, 1 km N and W of balneario by road, 3 (1 CML, 1 IADIZA, 1 OMNH). TUCUMAN: Departamento Trancas: Las Juntas, 22 km W Choromoro, 1 (OMNH).

Comments.—The above specimens provide additional localities for those provinces. This species was always captured with other bat species (Table 1).

At Chumbicha, Catamarca Province, this species was collected in nets placed over irrigation canals situated in moist, montane chaco habitat dominated by *Prosopis, Cercidium,* and other deciduous trees, as well as large, columnar cacti (*Cereus* and *Opuntia*). At Las Juntas, Tucumán Province, the habitat was montane transitional forest; bats were collected in nets placed in proximity to the Río Choromoro.

A juvenile/subadult was captured in December in Catamarca Province (n = 1). Adults have been collected in July in Tucumán Province (n = 1), and December in Catamarca Province (n = 2). A single adult female captured in December in

Catamarca Province was lactating. An adult male captured at the same time had testes of size 2.5 × 1.5 mm and was molting.

Lasiurus cinereus (Beauvois, 1796)

Specimens Examined.—(1) SAN LUIS: Departamento Chacabuco: Rincón de Papagayos, 2 km E Papagayos, 1 (OMNH).

Comments.—This is the first record of this species for the province, although Bárquez et al. (1993) included this province in the range. The species was captured with *Tadarida brasiliensis* (Table 1) in a net placed over a shallow pool between sand banks along a river in the montane chaco foothills. The individual was an adult male with testes measuring 5 × 2 mm that was captured in mid-May.

Lasiurus salinae Thomas, 1902

Specimens Examined.—(5) CATAMARCA: Departamento Capayán: Chumbicha, 1 km N and W of balneario by road, 3 (1 CML, 1 IADIZA, 1 OMNH); Chumbicha, at balneario, 1 (OMNH). SAN JUAN: Departamento Sarmiento: Pedernal, 1 (OMNH).

Comments.—Koopman (1993) placed *salinae* in synonymy with *borealis*. The type locality of *L. borealis salinae* is Cruz del Eje, Córdoba Province (Thomas, 1902). A second individual from Los Vázquez, Tucumán Province, was also identified by Thomas as *salinae*. Although our recognition of this taxon is tentative, individuals are morphologically distinct (e.g., markedly darker and browner) from *L. borealis* captured at the same locality on the same night. The San Juan and Catamarca specimens are new provincial records for the species. The distribution of the species now includes Tucumán, eastern Catamarca, western Córdoba, and eastern San Juan provinces. This species was captured with many other bat species (Table 1).

At Chumbicha, Catamarca Province, this species was collected in nets placed over irrigation canals situated in moist, montane chacoan habitat dominated by *Prosopis, Cercidium,* and other deciduous trees. At Pedernal, San Juan Province, the individual was captured in a net placed over a small stream in a wash near a riverbed; the area is part of the monte desert. The most common plants were *Prosopis, Larrea, Geoffroea, Baccharis,* and *Tessaria.*

Juvenile/subadult individuals have been captured in December in Catamarca Province ($n = 2$). Adults have been collected in April in San Juan Province ($n = 1$) and December in Catamarca Province ($n = 2$). A juvenile/subadult male captured in December in Catamarca Province had testes of size 3 × 2 mm and was molting.

Lasiurus varius (Poeppig, 1835)

Specimens Examined.—(3) NEUQUEN: 19 km N Villa La Angostura, along Hwy 234, 3 (1 CML, 1 IADIZA, 1 OMNH).

Comments.—Koopman (1993) placed *varius* in synonymy with *borealis*. Our nomenclature follows Barquez (1987) and Bárquez et al. (1993). Individuals of this taxon are morphologically quite distinct from *L. borealis*. This species is well documented for Neuquén Province and the specimens listed above, which were captured in a mature *Nothofagus* southern rain forest, provide a new locality for the province. Other species of bats collected at this locality include *Histiotus macrotus, Histiotus magellanicus,* and *Myotis chiloensis* (Table 1).

We captured two pregnant adult females and one adult male in December in

Neuquén Province. One female had two fetuses (crown–rump length, 12 mm) and the second had one fetus (crown–rump length, 11 mm).

Myotis albescens (E. Geoffroy, 1806)

Specimens Examined.—(21) SANTIAGO DEL ESTERO: Departamento Pellegrini: Santo Domingo, 21 (6 CML, 5 IADIZA, 10 OMNH).

Comments.—This species was previously cited for this site by Bárquez and Ojeda (1992). The specimens listed above indicate that the species is continuously distributed across the chaco, as was suggested by Bárquez and Lougheed (1990). Only one other species of bat, *Myotis nigricans,* was collected at this site (Table 1).

The habitat at this locality was heavily disturbed dry chacoan thorn scrub characterized by *Allenrohlfia vaginata, Cereus, Opuntia, Prosopis, Acacia,* and *Aspidospermum.* Most bats were collected during the day from the attic of the town's first aid station, whereas a few were collected by placing a net next to the first aid station in the evening.

A juvenile was captured during November in the province of Santiago del Estero ($n = 1$). Three nursing individuals also were collected. Adults were captured during November ($n = 17$) in this same province. A pregnant female with four fetuses was collected; crown–rump lengths ranged from 6 to 10 mm. Two additional females were lactating. Males had large scrotal testes ($n = 4$) or medium scrotal testes ($n = 1$).

Myotis chiloensis (Waterhouse, 1840)

Specimens Examined.—(6) CHUBUT: 3 km N Tecka along Hwy 40, 2 (1 CML, 1 OMNH). NEUQUEN: 19 km N Villa La Angostura, 4 (1 CML, 1 IADIZA, 2 OMNH).

Comments.—This is nearly the southernmost distributional record of this species. This was the only bat species collected at the Chubut Province locality, but it was collected in association with three other vespertilionid species at the Neuquén Province locality (Table 1).

The individuals from Tecka, Chubut Province, were found beneath an abandoned bridge over a stream in an area of riparian woodland within a Patagonian scrubland.

Adults were captured during November in Chubut Province ($n = 2$) and December in Neuquén Province ($n = 4$). A female captured in Neuquén was pregnant with one fetus (crown–rump length, 15 mm).

Myotis keaysi J. A. Allen, 1914

Specimens Examined.—(1) TUCUMAN: Departamento Burruyacú: Piedra Tendida, 12 km WNW Burruyacú along Río Cajón, 1 (OMNH).

Comments.—This locality is only the fourth known for the species in the province. It was captured with *Sturnira erythromos* and *Myotis nigricans* (Table 1) in nets placed along the Río Cajón. The habitat is montane transitional forest. The single adult male was captured in June.

Myotis levis (I. Geoffroy, 1824)

Specimens Examined.—(68) CATAMARCA: Departamento Capayán: Balneario Municipal Capayán, 1 (OMNH); Chumbicha, 1 km N and W of balneario by road, 34 (9 CML, 9 IADIZA, 16 OMNH). MENDOZA: Departamento La Valle: Reserva Telteca, 1 (OMNH). Departamento Santa Rosa: Reserva Ecológica

Ñacuñan, 1 (IADIZA). MISIONES: Departamento Guaraní: jct. Hwy 2 and Arroyo Paraíso, 13 (4 CML, 3 IADIZA, 6 OMNH); jct. Hwy 21 and Arroyo Oveja Negra, approx. 2 km W Parque Provincial Moconá, 1 (OMNH); 6 km NE by Highway 2 of jct. Highway 2 and Arroyo Paraíso, 1 (CML). SAN JUAN: Departamento Iglesia: Las Tumanas, along Hwy 510 at crossing of Río Tumanas, 1 (IADIZA). Departamento Sarmiento: Pedernal, 1 (OMNH). SAN LUIS: Departamento Ayacucho: Quebrada de Lopez, San Francisco del Monte de Oro, 1 (OMNH). TUCUMAN: Departamento Trancas: at km marker 42 on Highway 364, south of San Pedro de Colalao, 13 (3 CML, 3 IADIZA, 7 OMNH).

Comments.—The specimens from Misiones are the first documented records of the species for the province; previously, this species was known only from the provinces of Buenos Aires and Entre Ríos in the eastern part of its range. Bárquez et al. (1993) included Misiones Province in the distribution of this species. Based on our records, it is likely that the species will also be caught in the province of Corrientes. The specimens from San Juan are the second and third specimens collected in that province. The specimens from the provinces of Catamarca, Mendoza, San Luis, and Tucumán further document the distribution of this species in those provinces. This species was collected with many other bat species (Table 1).

Myotis levis was captured in many types of habitats. In Chumbicha, Catamarca Province, the habitat is moist montane chacoan forest. Bats were collected in nets placed over irrigation canals; one individual was captured while roosting in a building. At the Reserva Telteca, Mendoza Province, an individual was captured in a net placed over water in a temporary pool. This site is dominated by sand dunes with *Prosopis, Lycium, Atamisquea,* and *Geoffroea* in the vicinity. The specimen collected at Ñacuñan was found in a house; the habitat is monte desert. At Arroyo Paraíso, Misiones Province, bats were collected from a building in an area of mature upland semideciduous forest. At Arroyo Oveja Negra, also in mature moist forest, a bat was captured in a net placed across an arroyo with flowing water. At Las Tumanas, San Juan Province, the locality was above the river in a monte desert canyon that had chacoan influences; vegetation included plants in the genera *Trichocereus, Prosopis,* and *Larrea.* At Pedernal, nets were placed over a small stream in a wash near a riverbed in the mountains. Plants included *Prosopis, Larrea, Geoffroea, Baccharis,* and *Tessaria.* At Quebrada de Lopez, San Luis Province, nets were placed over a small cattle pond in thorn scrub. All of the bats collected at San Pedro de Colalao, Tucumán Province, were found in a dwelling; the surrounding habitat was transitional forest with secondary growth.

Juveniles were captured in Misiones Province in November ($n = 7$). Adults were recorded for Tucumán Province in January ($n = 13$), Mendoza Province in April ($n = 1$), San Juan Province in April ($n = 2$), San Luis Province in April ($n = 1$), Mendoza Province in May ($n = 1$), Catamarca Province in July ($n = 1$), Misiones Province in November ($n = 7$), Catamarca Province in December ($n = 34$), and Misiones Province in December ($n = 1$). Females were lactating in December in Catamarca Province ($n = 27$). An adult male collected in April in Mendoza Province had testes of size 4 × 2 mm. In San Juan Province in April, a male had testes measuring 2 × 1 mm. A male in San Luis Province in April had abdominal testes. In Misiones Province, in November, males had testes of size 7 × 5 mm ($n = 1$) and 8 × 5 mm ($n = 1$). Adult males had testes size of 3 × 2 mm ($n = 1$) and 4 × 3 mm ($n = 1$) in December in Catamarca Province.

Two females and a male from San Pedro de Colalao, Tucumán Province, were molting in late January.

Myotis nigricans (Schinz, 1821)

Specimens Examined.—(27) CHACO: Departamento Almirante Brown: 20 km NNW by road and 11 km NE by road El Mangrullo, 5 (2 CML, 1 IADIZA, 2 OMNH). SANTIAGO DEL ESTERO: Departamento Pellegrini: Santo Domingo, 21 (5 CML, 6 IADIZA, 10 OMNH). TUCUMAN: Departamento Burruyacú: Piedra Tendida, 12 km WNW Burruyacú along Río Cajón, 1 (OMNH).

Comments.—The Chaco locality is the westernmost one reported for the province. Specimens from Santiago del Estero and Tucumán provide new localities for this species in those provinces. This species was collected with many other bat species (Table 1).

At El Mangrullo, bats were collected in nets placed next to a water tank in the chacoan thorn scrub. At Santo Domingo, all specimens were found in the attic of a first aid station. The surrounding habitat was heavily disturbed chacoan thorn scrub dominated by *Allenrohlfia vaginata, Cereus, Opuntia, Prosopis, Acacia,* and *Aspidospermum.* At Piedra Tendida, the habitat was montane transitional forest. Bats were collected in nets placed parallel to the Río Cajón.

A juvenile male was captured in November in the province of Santiago del Estero. Subadults ($n = 7$) and adults ($n = 18$) were also collected at the same time. A single adult male was collected in July in Tucumán Province. A pregnant female with one fetus (crown–rump length, 10 mm) was captured in November in Santiago del Estero. The male collected in Tucumán Province had abdominal testes (1 × 1 mm).

Myotis riparius Handley, 1960

Specimens Examined.—(1) FORMOSA: Departamento Bermejo: El Churcal, approx. 10 km SSE Buena Vista, 1 (Arg).

Comments.—In 1987, this species was known only from a few specimens from Misiones and Corrientes provinces (Bárquez, 1987, 1988; Bárquez and Ojeda, 1992). In 1992, Bárquez and Ojeda (1992) reported specimens from the provinces of Chaco, Formosa, and Santiago del Estero. The above specimen documents the presence of this species in western Formosa. Also captured at this locality were *Eptesicus furinalis, Eumops patagonicus, Molossops temminckii,* and *Molossus molossus* (Table 1). The habitat was chacoan gallery forest. The adult male, collected in mid-July, was not reproductively active.

Myotis ruber (E. Geoffroy, 1806)

Specimens Examined.—(1) MISIONES: Departamento Guaraní: jct. Hwy 21 and Arroyo Oveja Negra, approx. 2 km W Parque Provincial Moconá, 1 (OMNH).

Comments.—This is the third record of this species in Misiones Province and the second known locality. This species was captured in a mature wet forest along with *Artibeus lituratus, Vampyressa pusilla,* and *Myotis levis* (Table 1). The adult male had small scrotal testes and was captured in December.

Family Molossidae

Cynomops abrasus (Temminck, 1827)

Specimens Examined.—(1) FORMOSA: Departamento Bermejo: 35 km S, 5 km E Ing. Guillermo N. Juarez, Puesto Divisadero, 1 (Arg).

Comments.—This species is listed in the genus *Molossops* (subgenus *Cynomops*) by Koopman (1993). We follow Bárquez (1987) and Bárquez et al. (1993) in recognition of the genus *Cynomops* based on distinct morphological characters. Although this species has been reported from Misiones Province, it has not been collected outside of northeastern Argentina. Cabrera (1930, 1957) and Yepes (1944) indicated its distribution in the provinces of Chaco, Formosa, Misiones, and Santiago del Estero, but Bárquez (1987) was only able to locate specimens from Misiones. This record is from western Formosa. The individual was captured in association with *Eptesicus furinalis, Eumops patagonicus, Molossops temminckii,* and *Molossus molossus* (Table 1). The habitat was chacoan gallery forest. The adult female, collected in mid-July, had a closed vagina.

Eumops patagonicus Thomas, 1924

Specimens Examined.—(6) FORMOSA: Departamento Bermejo: 35 km S, 5 km E Ing. Guillermo N. Juarez, Puesto Divisadero, 1 (Arg); El Churcal, approx. 10 km SSE Buena Vista, 3 (Arg). MISIONES: Departamento Cainguas: 10 km W Aristóbulo del Valle, 1 (CML); 10 km W Aristóbulo del Valle by road along Río Cuñapirú, 1 (OMNH).

Comments.—This species was synonymized with *E. bonariensis* by Koopman (1993) who indicated that the Patagonian record was probably accidental or erroneous. Validation of this species follows Bárquez (1987) and Bárquez et al. (1993). Bárquez (1987) noted that *E. bonariensis* and *E. patagonicus* were sympatric in Tucumán Province and represented different species. Additionally, the description of *patagonicus* has priority over the description of *E. bonariensis beckeri.* The above records further document the presence of this species in Misiones and Formosa. The Formosa specimens, which were captured in chacoan gallery forest, are the first from the western part of the province. This species was caught in association with many species of bats (Table 1). Four adults were captured in Formosa in mid-July. Both females had closed vaginas, one male had abdominal testes, and another had scrotal testes. An adult male and an adult female were collected in Misiones Province in November; the female had well-developed mammae.

Molossops temminckii (Burmeister, 1854)

Specimens Examined.—(15) CHACO: Departamento 1° de Mayo: along Hwy 90, 15 km NW jct. Hwy 90 and Hwy 11, Estancia San Miguel, 3 (1 CML, 1 IADIZA, 1 OMNH). FORMOSA: Departamento Bermejo: 35 km S, 5 km E Ing. Guillermo N. Juarez, Puesto Divisadero, 7 (Arg); El Churcal, approx. 10 km SSE Buena Vista, 5 (Arg).

Comments.—This is the third record of this species for Chaco Province and the first from eastern Chaco, where the species was captured in moist chacoan savanna habitat with interspersed forest. The Formosa specimens are the first for the western part of the province. See Table 1 for a listing of bat species caught in association with this species. The habitat of the Formosa locality is chacoan gallery forest.

Two adult females and an adult male were captured in November in Chaco Province. Each of the females was pregnant with one fetus (crown–rump lengths, 21 and 26 mm). The male had small scrotal testes (3 × 2 mm). Adult males and females were collected in mid-July in Formosa. All females (n = 5) had closed

vaginas. Five males had scrotal testes, one had abdominal testes, and data were not recorded for one individual.

Molossus ater (E. Geoffroy, 1805)

Specimens Examined.—(6) Departamento 1° de Mayo: along Hwy 90, 15 km NW jct. Hwy 90 and Hwy 11, Estancia San Miguel, 6 (2 CML, 1 IADIZA, 3 OMNH).

Comments.—This is the fourth locality for this species in the province and nearly doubles the number of known specimens from the province. *Sturnira lilium, Desmodus rotundus,* and *Molossops temminckii* were caught in association with this species at this locality (Table 1).

Six adult males were captured in November in Chaco Province. Two individuals were not breeding. Two males had small scrotal testes (6 × 4 mm) and two had medium scrotal testes.

Molossus molossus (Pallas, 1766)

Specimens Examined.—(7) FORMOSA: Departamento Bermejo: 35 km S, 5 km E Ing. Guillermo N. Juarez, Puesto Divisadero, 5 (Arg); El Churcal, approx. 10 km SSE Buena Vista, 2 (Arg).

Comments.—This species was previously known from four localities in the eastern part of the province. These records extend the distribution to include western Formosa. This species was caught in association with many other bat species at these localities (Table 1). The habitat at these sites is chacoan gallery forest. Adult females and an adult male were collected in mid-July. Females (n = 7) were not reproductively active and had closed vaginas. The male had scrotal testes.

Tadarida brasiliensis (I. Geoffroy, 1824)

Specimens Examined.—(53) CATAMARCA: Departamento Capayán: Chumbicha, 1 km N and W of balneario by road, 3 (OMNH); Chumbicha, at balneario, 3 (1 CML, 2 OMNH). Departamento Pomán: Pomán, 95 km S Andalgalá near balneario, 17 (7 CML, 3 IADIZA, 7 OMNH). SAN JUAN: Departamento Valle Fértil: Las Tumanas, along Hwy 510 at crossing of Río Tumanas, 3 (1 CML, 1 IADIZA, 1 OMNH); Las Tumanas, Río Tumanas, 4 (1 CML, 1 IADIZA, 2 OMNH). SAN LUIS: 9 km N Paso del Rey, 1 (OMNH). Departamento Chacabuco: Rincón de Papagayos, 2 km E Papagayos, 11 (2 CML, 3 IADIZA, 6 OMNH). Departamento Coronel Pringles: 1 km N Paso del Rey, along Arroyo de la Cañada Honda, 3 (1 CML, 1 IADIZA, 1 OMNH). TUCUMAN: Departamento Trancas: Las Juntas, 22 km W Choromoro, 5 (3 IADIZA, 2 OMNH). Departamento Yerba Buena: Biological Reserve at Horco Molle at residencia, 3 (1 IADIZA, 2 OMNH).

Comments.—The specimens from San Juan are the first records of this species for the province. The specimens from Catamarca, San Luis, and Tucumán are additional records for each of those provinces. This species was almost always captured in association with other species of bats (Table 1).

At Chumbicha, this species was captured in gallery forest in moist montane chaco. Nets were placed over or next to the pool and over irrigation canals. At Pomán, the habitat was monte desert dominated by cactus and bromeliads. At Las Tumanas, bats were collected in a net placed over the Río Tumanas—the site was a rocky monte desert canyon with a heavy influence of chacoan plants (*Acacia, Prosopis, Trichocereus*). At Rincón de Papagayos, nets were placed over a shallow

pool between sand banks of a river in a montane chaco canyon. At Las Juntas, bats were captured in nets placed across the Río Choromoro in montane transitional forest. The site at Horco Molle is humid transitional forest. Bats at this locality were captured while roosting behind a rain gutter.

No juveniles or subadults were collected during our surveys. Adults were captured in January in Tucumán Province ($n = 3$), April in San Juan Province ($n = 7$), April in San Luis Province ($n = 3$), May in San Luis Province ($n = 12$), July in Tucumán Province ($n = 5$), and December in Catamarca Province ($n = 23$). Pregnant females were captured in May in San Luis Province ($n = 2$). Lactating females were captured in December in Catamarca Province ($n = 13$). Two males collected in Tucumán Province in January had testes measuring 3 × 2 and 4 × 2 mm. A male captured in San Luis Province in April had abdominal testes. Males captured in San Luis Province in May had abdominal testes ($n = 1$) and scrotal testes of size 3 × 1 mm ($n = 1$) and 4 × 2 mm ($n = 1$). Males collected in Catamarca Province in December had testes measuring 3 × 2 mm ($n = 4$).

Individuals were molting in Catamarca in December ($n = 1$) and in Tucumán in January ($n = 1$).

Discussion

Many mammalogists have conducted field work in Argentina, but few have studied bats in any detail, and even fewer have worked on bats outside of the littoral zone surrounding Buenos Aires. Indeed, it is remarkable how few bats have actually been collected in Argentina's many provinces. The review by Bárquez (1987) illustrates the relative paucity of information on bats for most regions of the country. Most species have been recorded for a province with only a few specimens. Considering the large area encompassed by most provinces, and the great diversity of habitats in each of the country's provinces, especially those in the mountainous regions of the northeast and northwest, we believe that there is a great deal of new information awaiting those researchers who will dedicate some time to collecting bats in Argentina.

Much of our field work was centered in the colder months of winter when small mammal populations are high, or when the dry season makes chacoan and other forest habitats more accessible to vehicles. Thus we were not in the field during many of the warmer months when bat populations are at their peaks, or when migratory bats have returned to their summer ranges. Consequently, our sampling of bats should be considered cursory. Nonetheless, we have provided new and interesting data on the distribution and reproduction of many species. We expect that additional work on bats, especially in the northern rim of provinces, from Santa Fé, through Misiones, Corrientes, Formosa, Chaco, Salta, and Jujuy, will yield a great deal of new information on the bats of Argentina.

Acknowledgments

We thank the members of the 1990–94 field crews who participated in collecting the specimens. They include: Steve Adams, Mariel L. Campbell, Dr. Don Gettinger, Norberto Giannini, Rosanne L. Humphrey, Shamone Minzenmayer, Dr. Juan Carlos Morales, Dr. Ricardo A. Ojeda, Susana Ojeda, Elba Pescetti, and Suzy Peurach. Field work was supported by the Oklahoma Museum of Natural History and by a grant from the National Science Foundation (BSR-8906665) to M. A. Mares. Laboratory and computer facilities were provided by the Oklahoma Museum of Natural History of the University of Oklahoma. C. Kacmarcik produced the figure.

LITERATURE CITED

BAKER R. J., C. S. HOOD, AND R. L. HONEYCUTT. 1989. Phylogenetic relationships and classification of the higher categories of the New World bat family Phyllostomidae. Systematic Zoology, 38: 228–238.

BÁRQUEZ, R. M. 1987. Los murciélagos de Argentina. Unpublished Ph.D. dissert., Facultad de Ciencias Naturales e Instituto Miguel Lillo, Universidad Nacional de Tucumán, Argentina, 525 pp.

———. 1988. Notes on identity, distribution, and ecology of some Argentine bats. Journal of Mammalogy, 69:873–876.

BÁRQUEZ, R. M., AND S. C. LOUGHEED. 1990. New distributional records of some Argentine bat species. Journal of Mammalogy, 71:261–263.

BÁRQUEZ, R. M., AND R. A. OJEDA. 1992. The bats (Mammalia: Chiroptera) of the Argentine Chaco. Annals of Carnegie Museum, 61:239–261.

BÁRQUEZ, R. M., N. P. GIANNINI, AND M. A. MARES. 1993. Guide to the bats of Argentina. Oklahoma Museum of Natural History, Norman, 119 pp.

CABRERA, A. 1930. Breve sinopsis de los murciélagos argentinos. Revista del Centro del Estudio de Agronómico Veterinario, Universidad de Buenos Aires, 23:418–442.

———. 1957. Catálogo de los Mamíferos de América del Sur. I (Metatheria-Unguiculata-Carnivora). Revista del Museo Argentino de Ciencias Naturales "Bernardino Rivadavia," 4:1–307.

KOOPMAN, K. F. 1993. Order Chiroptera. Pp. 137–241, *in* Mammal Species of the World. A Taxonomic and Geographic Reference (D. E. Wilson and D. M. Reeder, eds.), Smithsonian Institution Press, Washington, D.C., 1206 pp.

MARES, M. A. 1973. Climates, mammalian communities and desert rodent adaptations: An investigation into evolutionary convergence. Unpublished Ph.D. dissert., University of Texas, Austin, 345 pp.

PHILIPPI, R. A. 1866. Über ein paar neue chilenische Säugethiere. Archiv für Naturgeschichte, 32(1): 113–117.

THOMAS, O. 1902. On mammals collected at Cruz del Eje, central Cordoba. Annals and Magazine of Natural History, series 7, 9:237–245.

———. 1916. Notes on the bats of the genus *Histiotus*. Annals and Magazine of Natural History, series 8, 17:272–276.

WILSON, D. E., AND D. M. REEDER. 1993. Mammal Species of the World: A Taxonomic and Geographic Reference. Smithsonian Institution Press, Washington, D.C., 1206 pp.

YEPES, J. 1944. Comentarios sobre cién localidades nuevas para mamíferos Sudamericanos. Revista de Argentina Zoogeografía, 4:59–71.

APPENDIX

Gazetteer of Localities

(numbers refer to numbered localities in Fig. 1)

1 6 km NE by Highway 2 of jct. Highway 2 and Arroyo Paraíso, (Misiones, Guaraní) 27°08′ S, 54°00′ W.

2 Aristóbulo del Valle, 10 km W by road along Río Cuñapirú (Misiones, Cainguas) 27°06′ S, 54°57′ W.

3 Balneario Municipal Capayán (Catamarca, Capayán) 28°52′ S, 66°14′ W.

4 Castaño Nuevo, 9 km NW Villa Nueva (San Juan, Calingasta) 31°02′ S, 69°33′ W.

5 Choya, 13 km NNW Andalgalá (Catamarca, Andalgalá) 27°32′ S, 66°24′ W.

6 Chumbicha, 1 km N and W of balneario by road (Catamarca, Capayán) 28°52′ S, 66°14′ W.

7 Chumbicha, at balneario (Catamarca, Capayán) 28°52′ S, 66°14′ W.

8 Complejo Astronómico El Leoncito, 7 km W (San Juan, Calingasta) 31°48′ S, 69°20′ W.

9 El Churcal, approx. 10 km SSE Buena Vista (Formosa, Bermejo) 22°54′ S, 62°08′ W.

10 El Mangrullo, 20 km NNW by road and 11 km NE by road (Chaco, Almirante Brown) 25°58′ S, 61°15′ W.

11 Estancia San Miguel, along Hwy 90, 15 km NW jct. Hwy 90 and Hwy 11 (Chaco, 1° de Mayo) 26°57′ S, 58°59′ W.
12 Horco Molle, Biological Reserve (Tucumán, Yerba Buena) 26°47′ S, 65°23′ W.
13 Jct. Hwy 2 and Arroyo Paraíso (Misiones, Guaraní) 27°11′ S, 54°03′ W.
14 Jct. Hwy 21 and Arroyo Oveja Negra, approx. 2 km W Parque Provincial Moconá (Misiones, Guaraní) 27°08′ S, 53°54′ W.
15 Las Juntas, 22 km W Choromoro (Tucumán, Trancas) 26°24′ S, 65°31′ W.
16 Las Tumanas, along Hwy 510 at crossing of Río Tumanas (San Juan, Valle Fértil) 30°52′ S, 67°20′ W.
17 Las Tumanas, Río Tumanas (San Juan, Valle Fértil) 30°52′ S, 67°20′ W.
18 On highway 9 at border with Salta, at campground on the way to El Carmen (Jujuy, El Carmen) 24°28′ S, 65°21′ W.
19 Paso del Rey, 1 km N, along Arroyo de la Cañada Honda (San Luis, Coronel Pringles) 32°57′ S, 66°00′ W.
20 Paso del Rey, 9 km N (San Luis) 32°52′ S, 66°00′ W.
21 Pedernal (San Juan, Sarmiento) 31°59′ S, 68°44′ W.
22 Piedra Tendida, 12 km WNW Burruyacú along Río Cajón (Tucumán, Burruyacú) 26°24′ S, 64°47′ W.
23 Pomán, 95 km S Andalgalá near balneario (Catamarca, Pomán) 28°24′ S, 66°13′ W.
24 Posadas, 61 km W, along Hwy 12 (Corrientes, Ituzaingó) 27°37′ S, 56°28′ W.
25 Puesto Divisadero, 35 km S, 5 km E Ing. Guillermo N. Juarez (Formosa, Bermejo) 24°14′ S, 61°46′ W.
26 Quebrada de Lopez, San Francisco del Monte de Oro (San Luis, Ayacucho) 32°40′ S, 66°07′ W.
27 Reserva Ecologia Ñacuñan (Mendoza, Santa Rosa) 34°03′ S, 67°58′ W.
28 Reserva Telteca (Mendoza, La Valle).
29 Rincón de Papagayos, 2 km E Papagayos (San Luis, Chacabuco) 32°40′ S, 64°57′ W.
30 San Francisco del Monte de Oro, 7 km E from downtown (San Luis, Ayacucho) 32°36′ S, 66°07′ W.
31 San Pedro de Colalao, south of, at km marker 42 on Highway 364 (Tucumán, Trancas) 26°14′ S, 65°29′ W.
32 Santo Domingo (Santiago del Estero, Pellegrini) 26°13′ S, 63°47′ W.
33 Tecka, 3 km N, along Hwy 40 (Chubut) 43°27′ S, 70°48′ W.
34 Villa La Angostura, 19 km N (Neuquén) 40°40′ S, 71°40′ W.
35 Virgen del Valle picnic area on Highway 64 between Santa Catalina and La Puerta Chiquita (Santiago del Estero, Guasayán) 28°09′ S, 64°50′ W.